Induced subgraphs P12120_en

Given an undirected graph $G = (V, E)$, any $S \subseteq V$ induces a subgraph $G[S] = (S, E')$, where E' contains all edges in E that join two vertices in S. Let $d(S)$ denote the minimum degree of the vertices in $G[S]$.

You are given a graph G and a size s. Which is the maximum degree d for which there exists some S with at least s vertices and such that $d(S) \geq d$?

Input

Input consists of several cases, each with the number of vertices n, the number of edges m, and m pairs x y (with $x \neq y$), one for each edge of the graph, followed by s. The vertices are numbered from 0 to $n - 1$. Assume $1 \leq n \leq 10^3$, $0 \leq m \leq n(n-1)/2$, that there are no repeated edges, and $1 \leq s \leq n$.

Output

For every case, print the required answer.

Sample input 1

```
6 6
0 1  1 2  2 0  0 3  1 4  2 5
3

6 6
0 1  1 2  2 0  0 3  1 4  2 5
4

2 1
1 0
2

2 0
2

3 2
0 1  0 2
2
```

Sample output 1

```
2
1
1
0
1
```

Problem information

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